

**MULTIPLEXER HARDWARE AND SOFTWARE FOR CONTROL OF A
DEFORMABLE MIRROR**

ABSTRACT OF THE DISCLOSURE

5 Actuators in a deformable mirror are enabled and disabled by
switches electrically coupled between the actuators and at least
one reference node. For controlling the actuators, a deformable
mirror driver electronics system may comprise the switches and
10 other electronic components, such as an amplifier, processor,
digital-to-analog converter, and interface. Multiple components
may be employed to provide parallel functions to operate the
deformable mirror in zones. A processor routine executed by the
processor may be employed to coordinate and protect the
15 amplifier, switches, and actuators. The processor routine
comprises high and low power imaging modes. The electronics may
be packaged with the deformable mirror in a bezel having
separable mechanical and electrical sub-assemblies that are
field-replaceable. The multiplexer deformable mirror subsystem
20 may be integrated with other adaptive optics subsystems to close
an adaptive optics loop, thus forming a multiplexer adaptive
optics system. Network communications can be conducted between
subsets of the adaptive optics system and a remote system to
perform remote calibration or even remote control of the
deformable mirror subsystem. The multiplexer adaptive optics
system may be integrated into larger systems, such as a space-
based telescope.